DOCUMENT RESUME

ED 191 496 IR 008 755

AUTHOR Anderson, Carol Lee: Herstand, Jo Ellen
TITLE Automating a Library: An Investigative Study.
PUB DATE 79
NOTE 19p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Card Catalogs: Case Studies: College Libraries: *Evaluation Criteria: Higher Education: Interlibrary Loans: *Library Automation: *Library Circulation: Library Equipment: Needs Assessment: Online Systems

ABSTRACT

This paper describes how librarians at the University of Oklahoma reviewed the state of the art of automated systems for libraries, evaluated current sophisticated and comprehensive programs, considered the implications of such systems for closing the card catalog, and assessed the impact which the total system would have on the university libraries. Project activities reported include (1) the examination and evaluation of various existing automated circulation systems, (2) a study of methods and costs of shelflist conversion, (3) the development of a non-conventional access scheme for the library's resources, and (4) the identification of future impacts of an automated circulation system on library operations. The study focused on the evaluation of automated circulation systems as a foundation for developing a larger system. References are included, as well as forms listing the library's circulation requirements that were used in comparing systems. (SW)

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Automating a Library:

An Investigative Study

Carol Lee Anderson

Jo Ellen Herstand

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ABSTRACT

Technological advances have been a major influence on library operations in past years. More libraries are surveying collection access choices because of decreasing equipment costs, increased demands for more information services and a need for more management information. This paper describes describes how one institution reviewed the state of the art, evaluated current systems, considered the implication of such systems for closing the card catalog and assessed the impact which the total system would have on the University Libraries.

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Technological advances have been a major influence on library operations in past years. "The computer has been a significant agent of change in libraries... and we can expect that future developments will be even more dramatic."[1] Within libraries, technological capabilities have increased the efficiency, productivity, and flexibility of many aspects of daily routine. Due to inflation the costs of operating a library continue to rise. Demands for new information services increase steadily. Computer operating costs have begun to stabilize, if not decrease. Whether affecting operations within or between institutions these significant facts have all greatly influenced the concept of collection access.[2,3] More libraries are closely surveying available collection access choices and are considering automation as a possible answer.

This paper describes how one institution (the University of Oklahoma) reviewed the state of the art, and examined possible applications of an automated access system within the library. Several factors were influential in deciding upon this course of action. First, the University of Oklahoma Libraries have had in-house computer supported systems for acquisitions, serials, and special collections. These smaller in-house systems have successfully demonstrated the capabilities of automation. This success has encouraged librarians in planning for even more sophisticated and comprehensive automated programs. Secondly, the coming of AACR II has provided an opportunity for librarians to explore collection access and to speed up serious planning for on-line catalogs and authority

files. Finally, automation has been proven effective in facilitating the sharing of materials between institutions.[4] Automated circulation systems have been the foundation for these networking capabilities.[5] "Resource sharing activities supported by computer technology are appealing to today's libraries facing increasing demands for services and tightening budgets,"[6] and the University of Oklahoma is no exception. Naturally, some feel that budget adversity is forcing the imperfect national network to emerge as a coherent, integrated whole more rapidly than it would have, had libraries continued to receive the kind of financial support of the 1960's.[7] Others feel that resource sharing is best viewed as an extension of parameters rather than a major economic savings.[8] In either case the implications of improved technology are apparent. Selecting a flexible and versatile automated system would have "enormous impact on individual library procedures and organization, in addition to facilitating expanded programs in resource sharing."[9]

In spite of benefits to be derived from automating, the decision to automate in these cost conscious times is a difficult one. Will the added control, the enhanced efficiency and increased speed of circulation functions, for instance, be worth the cost? Will additional management information be sufficiently beneficial to justify the expenditure? Will increased networking potential be realized? If the decision to automate is reached, what equipment will be selected? Is the system selected on current or projected potential? Is it possible to assure that the equipment will not be outmoded in the near future? The questions to be asked and the decisions to be made are many and complicated.

The Dean of the University Libraries at the University of Oklahoma appointed an ad-hoc task force to review and evaluate automated library systems, to consider the implications of such systems for closing the card catalog, and to assess the impact which a total system will have on the University Libraries.

The Dean's charge to the task force indicated a desire to assess automated circulation systems as a foundation for developing a larger system. The charge to the task force outlined the direction which the committee was to take. Instructions were to:

* Examine various commercial, and other, automated circulation systems and recommend systems most appropriate to the needs of the University of Oklahoma Libraries
* Study methods and costs of shelflist conversion and other ramifications which may be apparent in the conversion process
* Develop a non-conventional access scheme for the resources of the University Libraries
* Identify future ramifications of an automated (circulation) system

The task force was comprised of three persons: The Head of Access Services (Circulation), chair, the Head of Cataloging and the Head of Interlibrary Loan. The Associate Director for Public Services was an ex-officio member of the committee. The task force decided to rely on the strengths of each member by allotting duties in accordance with those strengths. Thus, the Head of Access Services was primarily responsible for circulation concerns; the Head of Interlibrary Loan, networking and future potential; and the Head of Cataloging, access options. Each would address these concerns separately and bring the findings to the task

force as a whole, where conclusions would be further examined.

As an initial response to the charge the committee decided to proceed with an evaluation of systems, based on the requirements of the University of Oklahoma Libraries. In order to determine those requirements, a needs assessment was conducted.[10] The needs assessment addressed circulation/reserve, conversion, networking, hardware, software, growth and expansion. In the beginning these categories were not readily apparent to the task force. As a starting point for the needs assessment, the committee looked at the current and projected needs of the University Libraries. Only after much discussion and several revisions were the final categories of the needs assessment formalized. The methodology planned by the task force was that these areas would be the first to be investigated. Any additional topics that were uncovered as the study progressed would be discussed and incorporated into the appropriate section of the final report. As the work of the task force progressed, the extreme importance of flexibility and constant revision of both the methodology and the study findings became apparent. In addition, the task force became increasingly aware of the wisdom of keeping as many options as possible open to new directions, in order to better plan for the future.

The results of the needs assessment revealed the following minimum requirements, which were continually reassessed and refined:

a) Circulation/Reserve: On-line access to circulation control records is necessary for both the main library and for branches.[11] The system must have the capacity to handle reserve and "regular" circulation, the ability to protect file integrity, and the capability to generate overdue notices and to calculate fines. The

system must have the capacity for full bibliographic records of all current entries plus five years' growth potential.

b) Conversion: The process must fit both the University Libraries' present and projected needs. The method chosen should be cost-beneficial.

c) Networking: The system must have cooperative networking capabilities for the purpose of sharing materials and human resources. The system should have the flexibility plus growth potential which are present in unmodified hardware. It should be capable of interfacing with one of the major bibliographic networks, e.g., OCLC, RLIN, etc. Emerging local networks are developing with an eye to these regional and national networking operations.[12] OTIS, the Oklahoma Telecommunications Interlibrary Systems, is currently using the OCLC interlibrary loan subsystem for the state network.

d) Hardware: Terminal utilized should have provisions by which various databases can be accessed. For instance, if one type of terminal has many uses, a proliferation of service contracts for varied terminals will be avoided. Consideration should not be limited to mini-computer technology alone.[13]

e) Software: At the present time, industry standard software or standard programming language is considered essential. Once interface capabilities become more sophisticated, this need will subside.

f) Growth and expansion: The system should have the ability to become or to interact with an on-line catalog, acquisitions subsystem, serials control subsystem and/or other library systems.[14] If the system is properly designed "a library may add or expand applications without the need for reprogramming or other adverse

impact on the existing applications.[15]

After concluding the needs assessment, the decision was made to form a subcommittee to address point three of the charge: a non-conventional access scheme for the Library's resources. The subcommittee which was chaired by the Head of Cataloging, was responsible for discussing AACRII ramifications and an analysis of the costs of alternative access systems.

The next step in the study was to compare the needs of the University Libraries with the capabilities and attributes of each system. The various systems were analyzed according to these needs, broken down by the following specific points:[16]

a) type of C.P.U. used (mainframe, miniframe, etc.)

b) hardware/software utilized

c) hardware/software maintenance

d) branch to branch communications capabilities

e) available or projected subsystems

f) interfacing capabilities with campus computer services and regional networks

In order to evaluate systems according to both their current capabilities and future potential, a series of charts were devised as a means of comparing specific system attributes. Once comparisons were made, a rating of "currently acceptable", "having future potential", and "not acceptable" was assigned to each system. Charts were presented in the final report only for systems rated as "acceptable" and "having future potential". Separate charts were designed to assess: General Features, Circulation/Reserve Functions, Bibliographic Access, Networking, and Management Information.

All of the systems investigated were commercially available with the

exception of one system. The in-house system at a major university was also given consideration. The in-house system offered several ideas and reference points for system comparison.

Information for rating and analyzing the various systems was gathered in a numbered of ways. The committee as a whole made several site visits to places which had an installation in operation. Reports, internal documents and consultant's papers produced by and for other institutions supplied additional information. The vendors were helpful about supplying lists of libraries currently using their system, in addition to providing other informations as requested. Several user contacts were especially helpful.

Conversion information was more difficult to gather. Bibliographic database vendors, local consortia and companies specializing in conversion and data entry supplied cost information. Those libraries who have undergone the conversion process have provided very useful information.

From the beginning the committee did not attempt to choose one specific system. Instead it eliminated from consideration those systems which presently neither satisfy the requirements of the University of Oklahoma Libraries nor show potential for future satisfaction. Systems which were designated as having future potential, but were not market tested were very difficult to evaluate. On the other hand, it was much less difficult to evaluate systems which were established in an environment similar to the University of Oklahoma.

In developing criteria for evaluation, the committee was careful to construct a method which would permit a further definition of needs. After needs were assessed and options reviewed, the evaluation of the systems

was simplified. In retrospect, the key to the entire study was the realization that needs must be established prior to any discussion of system qualities. It is important to know what basics are required of a system before making site visits or talking with vendors. Once the basics are established, site visits further re-define these needs. At this point discussion with vendors concerning specific system capabilities can prove most beneficial. Using this method, the task force accomplished much of the preliminary investigation needed for the eventual realization of an integrated access system for the University of Oklahoma Libraries.

NOTES

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5. Markuson, Barbara Evans. "Cooperation and Library Network Development." College and Research Libraries 40:2 (March 1979), page 131.

6. Rouse, page 79.

7. Reid, Marion. "Coping with Budget Adversity: the Impact of the Financial Squeeze on Acquisitions." College and Research Libraries 37:3 (May 1976), page 271.

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9. University of Illinois. Graduate School of Library Science. Clinic on Library Applications of Data Processing. Proceedings, 1978. Urbana-Champaign, Illinois, 1978, page 52.

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11. Dranov, Paula. Automated Library Circulation Systems 1977-78. White Plains, New York: Knowledge Industries, Inc., 1977, page 5.

12. NEWS Section. Library Journal 104:5 (March 1, 1979), page 528.

13. Simpson, George A. Automated Circulation Systems in Public Libraries. Virginia: Metrek Division of the MITRE Corporation, June 1978, page 17.

14. Ibid.

15. Grosch, Audrey N. Minicomputers in Libraries. White Plains, New York: Knowledge Industry, Inc., 1979, page 17.

16. Dranov, Chapter III. In Automated Library Circulation Systems 1977-78, Paula Dranov used very similar evaluative breakdowns. In addition, Dranov also analyzed each system by cost.

APPENDIX

SYSTEMS COMPARISON CHARTS

The immediate and future needs of the University of Oklahoma Libraries are presented graphically in the following charts. Systems were rated as:

— Acceptable

— Systems having future potential

"Unacceptable" systems are not represented in charts.

An "x" indicates that the system provides the capability in question; and "o" that it does not. A "?" signifies that we are currently unsure. The charts should be studied with regard to keeping the widest possible array of opportunities open for the future.

Initially, the system will be required to handle circulation and reserve functions. Plans are for the system to eventually be expanded into a total library system and this anticipated expansion is reflected in the charts.

CIRCULATION

Requirement				
LOAN PERIODS				
10 loan periods necessary				
loan period calculated according to item status				
loan period calculated according to patron status				
RESERVE				
access to items by course number				
access to items by instructor				
LABELS				
OCR-A with check digit				
Barcode with check digit				
NOTICES generated--patrons				
recall notice to patron with book				
notice to patron return of recall item				
overdue notice(s)				
notice with library specified wording				
notification of restricted borrowing privileges				
FINES				
calculated by item type automatically				
running total kept by individual patron				
calculated by patron type				
forgiven by operator				
RENEWAL				
renewal of items not blocked				
renewal of items to valid non-delinquent patrons				

CIRCULATION (Continued)

Requirement				
Overdue shelflist search				
Reserve shelflist search				
Listing of patrons with overdue reserve materials generated 3 hours after materials due				
Back-up of each transaction				
ITEM ACCESS				
item circulation status validated				
access by item number				
ACCESS TO PATRON FILES				
access by name				
access by unique number				
access by social sec. no.				
automatic validation of patron and patron status				
delinquent patron trap				
reason for patron trap				
list of overdue books checked to a patron				
no. of patron categories				
HOLD/RECALLS CAPABILITY				
hold on specific copy				
list of patrons waiting for specific item				
patron can place hold on subject (call no.) level				
Specific item trap (Lost, Missing, Bindery, etc.)				

MANAGEMENT INFORMATION

Requirement				
Circulation by patron types--day, hour, month				
Circulation by material type--day, hour, month				
Circulation of specific classification breakdown				
Renewals by patron type				
Renewals by material type				
Circulation by terminal				
No. of overdue notices generated				
No. of hold/recall notices produced				
No. of delinquent borrowers by type				
No. of books held by delinquent borrowers by type				
ILL stats				
Missing book summarization by location and usage				
No. of items checked in by branch, branches and main				
Materials processed by reserve broken down by instructor/course number				
List each semester: No. of times each item has circulation broken down into course/instructor listing				
All of the above broken down by branch				
Intra branch record keeping capabilities				

Requirement				
Interface UTLAS				
Interface WLN				
Record keeping ability for interlibrary loans				
Copyright violation warning and control				

BIBLIOGRAPHIC ACCESS

Requirement				
Full bibliographic record				
Access by name/partial name				
Access by title/partial title				
Access by author-title				
Access by subject				
Access by series entry				
Boolean "and/or" capability				
Access by L. C. card no.				
Access by Control no.				
Access by ISBN				
Access by ISSN				
Access by SU-DOC number				
Access by call number				